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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/08/2003

Martin J. Oosterhuis

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EXAMINER

KANG, JULIANA K

ART UNIT

PAPER NUMBER

2874

DATE MAILED: 01/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

21

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/657,403	OOSTERHUIS ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Juliana K. Kang	2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 8/9/05 (Election).
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) 13-24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |                                                                                                                                             |                                                                                         |
|---------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                                                 | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                                        | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>9/8/03</u> . | 6) <input type="checkbox"/> Other: _____                                                |

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1. Applicant's election with traverse of invention I (i.e. claims 1-6) in the reply filed on August 9, 2005 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse. However, the Examiner inadvertently restricted claims 7-12 to Invention II. After carefully review of all the claims, claims 7-12 appear that they should be examined together with claim 1-6. Thus claims 1-12 will be treated as one invention and claims 12-24 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected inventions, there being no allowable generic or linking claim.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. **Claims 1, 2, 4, 5, 7, 9, and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Fukahori et al (U.S. Patent 4,872,737).**

Regarding claims 1, 4 and 5, Fukahori et al disclose a fiber optic rotary joint comprising: a housing defining an internal cavity adapted to be at least partially filled with a fluid (see column 7 lines 65-67); first and second optical collimation arrays (9a, 9b, 10a, 10b) disposed on opposite sides of the internal cavity; a reversion prism (3); and interface optical elements (30a, 30b, 31a, 31b) proximate collimation arrays and the reversion prism, said interface optical element including an optically flat surface and permit optical signals that are oriented normal to the optically flat surface to be transmitted between the fluid and the interface optical element (see Fig. 4 and 6).

Regarding claim 2, Fukahori et al show the claimed reversion prism structure (3) and the interface optical element having a flat surface that is orthogonal to the longitudinal axis of the reversion prism (see column 5 lines 22-27, 58-68 and column 6 lines 1-3).

**4. Claim 7 is rejected under 35 U.S.C. 102(e) as being anticipated by Verma et al (U.S. Patent 6,646,745 B2).**

Regarding claim 7, Verma et al disclose a reversion prism comprising: a reversion prism (dove prism, 20) extending longitudinally between opposed ends surfaces (28, 30), said reversion prism defining a longitudinal axis extend through the opposed end surfaces, said opposed end surfaces disposed at a nonorthogonal angle relative to the longitudinal axis; and an interface optical element (22) disposed proximate a respective end surface (24) of said reversion prism, said interface optical element including an optically flat surface (38) that is orthogonal to the longitudinal axis.

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**5. Claims 7 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Ames (U.S. Patent 5,568,578).**

Ames discloses a reversion prism comprising: a reversion prism (36) extending longitudinally between opposed ends surfaces (28, 30), said reversion prism defining a longitudinal axis extend through the opposed end surfaces, said opposed end surfaces disposed at a nonorthogonal angle relative to the longitudinal axis; and interface optical elements (18) disposed proximate both end surfaces of said reversion prism, said interface optical element including an optically flat surface (38) that is orthogonal to the longitudinal axis (see Fig. 1 and 2).

***Claim Rejections - 35 USC § 103***

**6.** The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fukahori et al (U.S. Patent 4,872,737).**

As described above Fukahori et al disclose the claimed invention except an index matching element disposed between the collimating lens and the interface optical element. Using an index matching material between two optical elements that has a gap between them are well known in the art in order to improve coupling efficiency. Thus, it would have been obvious to one having ordinary skill in the art at the time the

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invention was made to use an index matching material between the collimating lens and the interface optical element of Fukahori et al to improve optical coupling efficiency.

**8. Claims 3, 8, 10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukahori et al (U.S. Patent 4,872,737) and further in view of Han et al (U.S. Patent 6,704,143 B1).**

As described above Fukahori et al teach the claimed invention except reversion prism that has an index of refraction that is greater than an index of refraction of the interface optical element, the mating surface of the interface optical element disposed at the same nonorthogonal angle as the reversion prism end surface and the interface optical element comprising a triangular prism. Han et al teach an optical device assembly where the optical path length through an optical element is adjustable with high precision using different configurations such as one having three segmented optical element as shown in Fig. 2A and by selecting appropriate refractive indices, length and angles of the segments (see column 6 lines 5-10). Fukahori et al teach the invention reduces the prism length and the entire length of the rotary joint providing reduced coupling loss. Thus it would have been obvious to one having ordinary skill in the art at the time the invention was made to apply teach of Han et al in Fukahori et al to provide even more precise length for the reversion prism for the optimum coupling efficiency.

### ***Conclusion***

9. The prior art documents submitted by applicant have been considered and made of record (note the attached copy of form PTO-1449).

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Gibbs (U.S. Patent 5,323,259) teach a reversion prism assembly comprising a reversion prism (13) and an interface optical element (4). Townsend et al (U.S. Patent 6,782,160 B2) teach an optical rotary joint comprising a version prism and an interior (74) filled with a transparent liquid to form the device suitable for high pressures (see column 6 lines 5-14).

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juliana K. Kang whose telephone number is (571) 272-2348. The examiner can normally be reached on Mon. & Fri. 10:00-6:00 and Tue. & Thur. 10:00-3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rod Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

**JULIANA KANG**  
**PRIMARY EXAMINER**

*Julia Kang*  
*1/20/06*